

NAME:

DATE:

Unit-2 Mastery Assessment (version 602)

Question 1 (10 points)

Let f represent a function. If $f[45] = 42$, then there exists a knowable solution to the equation below.

$$y = \frac{f[2x + 29]}{3} - 5$$

Find the solution.

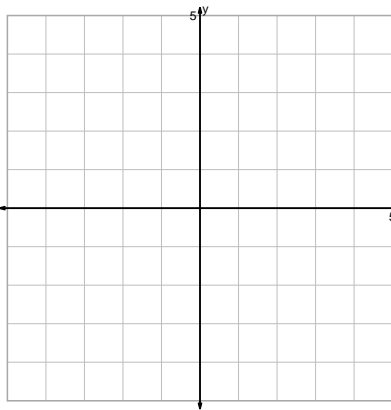
$$x =$$

$$y =$$

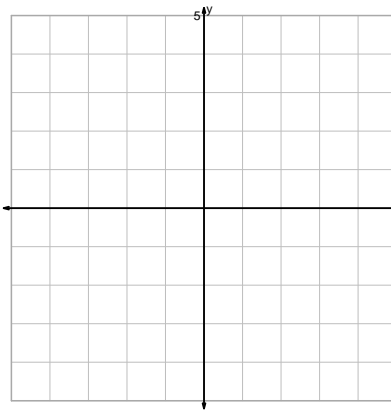
Question 2 (20 points)

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

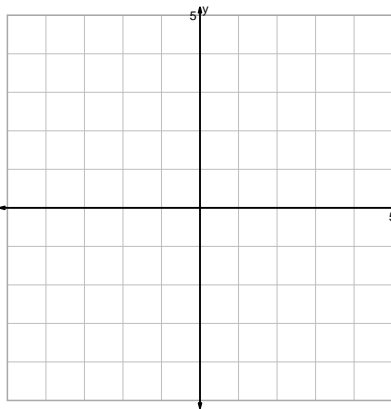
$$y = x^2 - 2$$



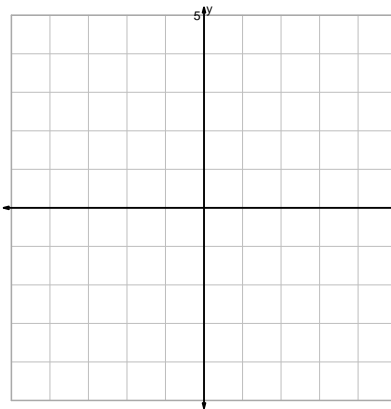
$$y = -\log_2(x)$$



$$y = (x - 2)^3$$

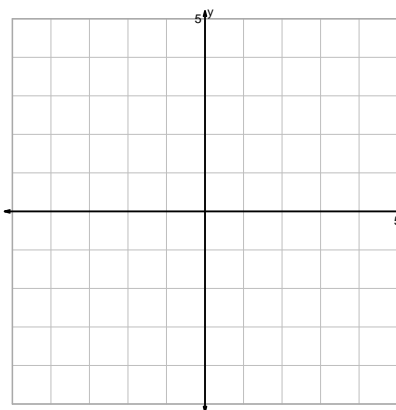


$$y = x^2 + 2$$

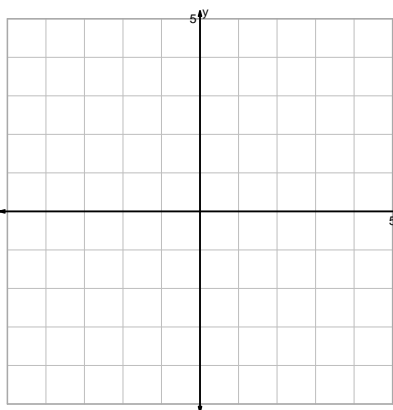


Question 2 continued...

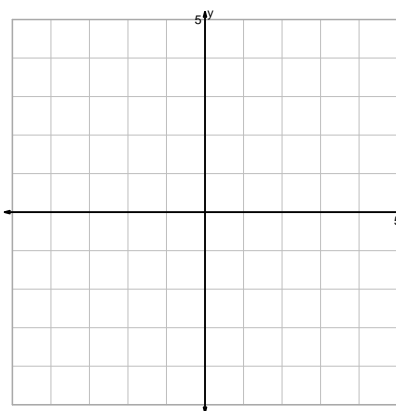
$$y = \sqrt[3]{2x}$$



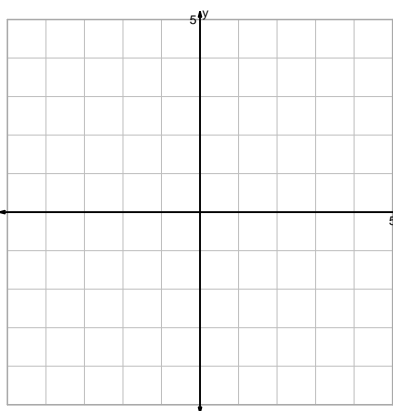
$$y = \sqrt{-x}$$



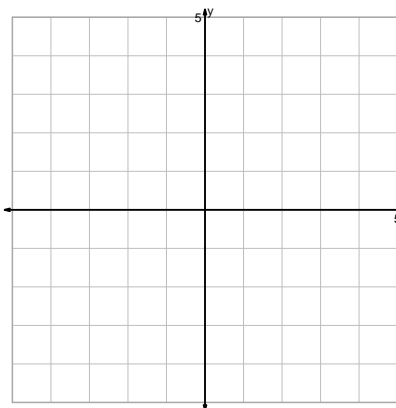
$$y = 2 \cdot \sqrt{x}$$



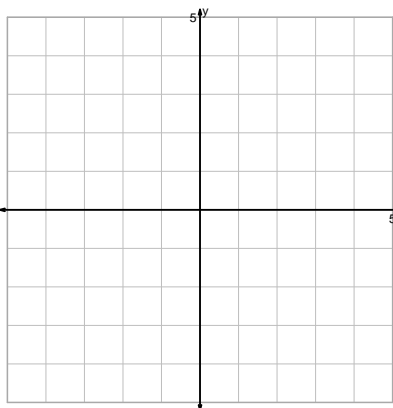
$$y = \sqrt[3]{x+2}$$



$$y = 2^{\frac{x}{2}}$$

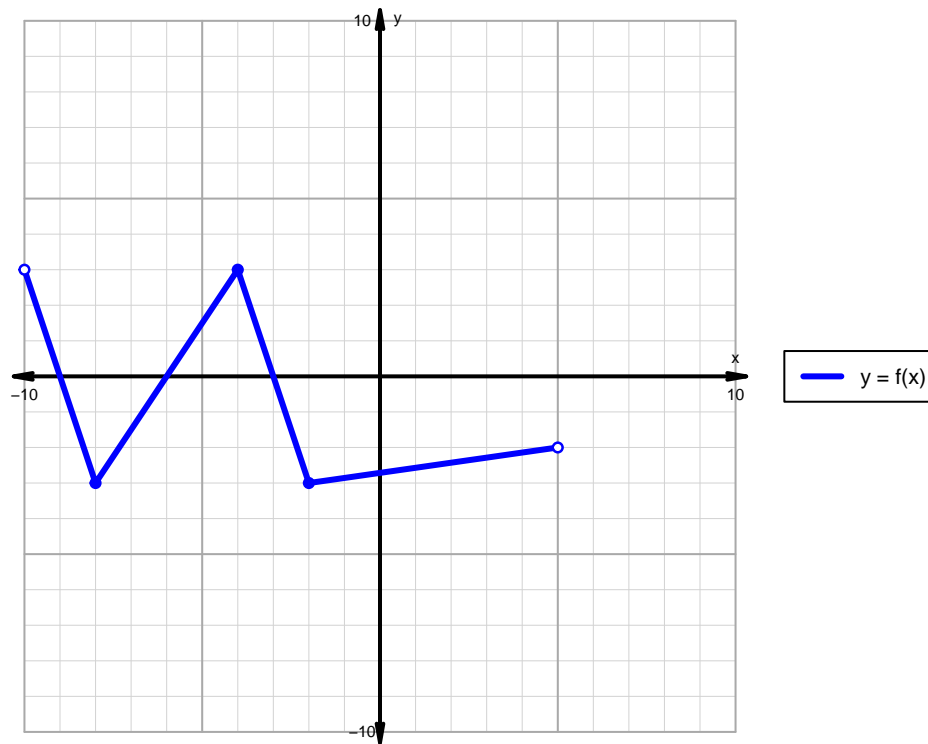


$$y = \frac{\log_2(x)}{2}$$



Question 3 (20 points)

A function is graphed below.



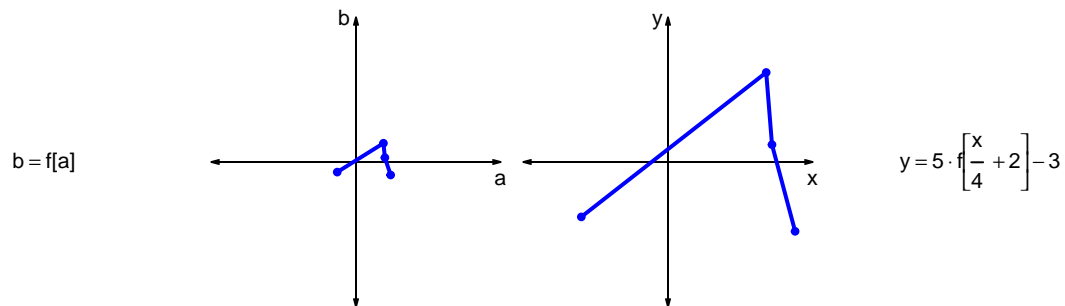
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4 (20 points)

Let f represent a function. The curves $b = f[a]$ and $y = 5 \cdot f\left[\frac{x}{4} + 2\right] - 3$ are represented below in a table and on graphs.

a	b	x	y
-13	-7	-60	-38
19	13	68	62
20	3	72	12
24	-9	88	-48



- a. Write formulas for calculating x from a and calculating y from b . (Or, write the coordinate transformation formula.)
- b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = 5 \cdot f\left[\frac{x}{4} + 2\right] - 3$?

Question 5 (10 points)

A parent square-root function is transformed in the following ways:

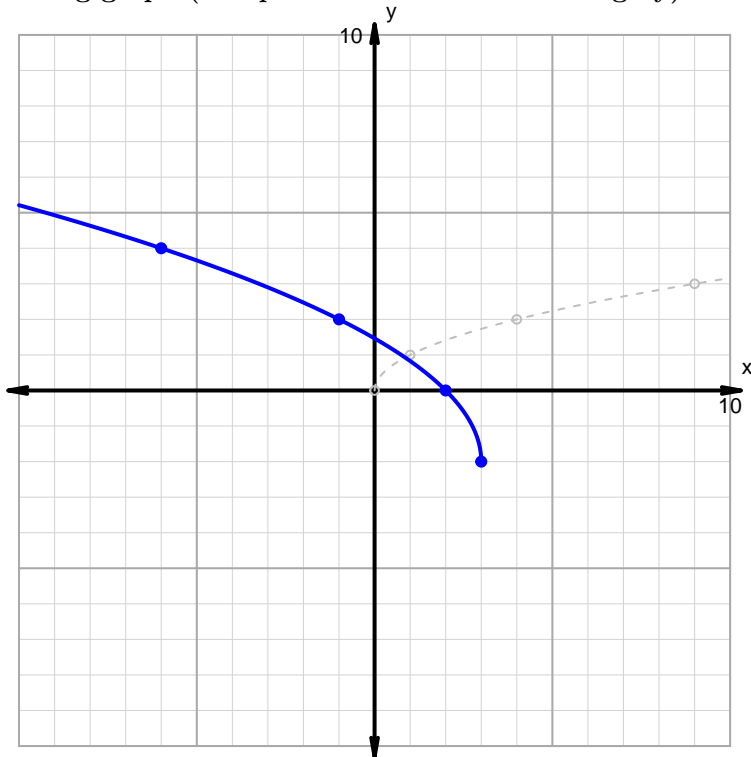
Horizontal transformations

1. Translate left by distance 3.
2. Horizontal reflection over y axis.

Vertical transformations

1. Translate down by distance 1.
2. Vertical stretch by factor 2.

Resulting graph (and parent function in dashed grey):



- What is the equation for the curve shown above?

Question 6 (20 points)

Make an accurate graph, and describe locations of features.

$$y = \frac{-1}{2} \cdot |x - 7| + 1$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	